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FAO PLANT PROTECTION BULLETIN

is issued as a medium for the dissemination of information received by the World Reporting Service on Plant Diseases and Pests, established in accordance with the provisions of the International Plant Protection Convention, 1951. It publishes reports on the occurrence, outbreak and control of pests and diseases of plants and plant products of economic significance and related topics, with special reference to current information. No responsibility is assumed by FAO for opinions and viewpoints expressed in the Bulletin.

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FAO Plant Protection Bulletin

Vol. II, No. 8 A Publication of the May 1954

World Reporting Service on Plant Diseases and Pests

Scale Insects on Citrus in Tripolitania

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Expanded Technical Assistance Program, Agriculture Division, FAO

Scale insects inflicted great losses to citrus in many parts of Tripolitania, Libya in 1953. The decline of orange and mandarin trees as a result of attacks was frequently observed. The infested trees lost their leaves early in the season and, in particularly serious cases, defoliation was accompanied by the withering of twigs and even of large branches.

The scale insects have equally grave effects on citrus exports. Indeed, the phytosanitary legislation of most importing countries forbids the entrance of plants or parts of plants infested with these insects. Even a very light infestation is sufficient to cause the entire shipment either to be refused or destroyed, which means severe losses for the exporter and discouragement of future exports.

The control of scale insects on citrus in Libya is, therefore, a matter calling for urgent action in the interest both of the health and productivity of citrus trees, and of the export trade.

During 1953 efforts were made to determine the species and the geographic distribution of scale insects destructive to citrus. Experiments and demonstrations were carried out in several localities where heavy infestation occurred to determine and publicize the control methods.

Species Observed

The scale insects observed in Tripolitania in 1953 are enumerated below. The determination was made by Professors A. Balachowsky of Paris and G. Russo of Naples, to whom sincere thanks are due.

Diaspinae:

Chrysomphalus dictyospermi Morg., dictyospermum scale
Parlatoria ziziphi Lucas, black parlatoria
Parlatoria pergandei Comst., chaff scale
Lepidosaphes citricola Pack. (= *L. beckii* Newm.), purple scale

Lecaninae:

Coccus hesperidum L., soft scale

Pseudococcinae:

Pseudococcus citri Risso, citrus mealybug

Margarodidae:

Icerya purchasi Mask., cottony-cushion scale

Economic Importance and Geographic Distribution

Extensive surveys made in the majority of the citrus-growing regions of Tripolitania have established the precise geographic distribution of the insects; this information, in respect of the four most important species, is illustrated in Figure 1.

The degree of infestation and the extent of damage vary greatly according to species and the location of the orchards. Methods of cultivation as well as the sanitary and physiological conditions of the trees are also important contributing factors. Vigorous trees are generally attacked less than weak trees. Isolated plantations and well-aerated trees are also less liable to infestation.

Chrysomphalus dictyospermi is the most widespread and destructive species, occurring in Tripoli and its surrounding areas and on the coast west of this region. It is also found sporadically in orchards situated on

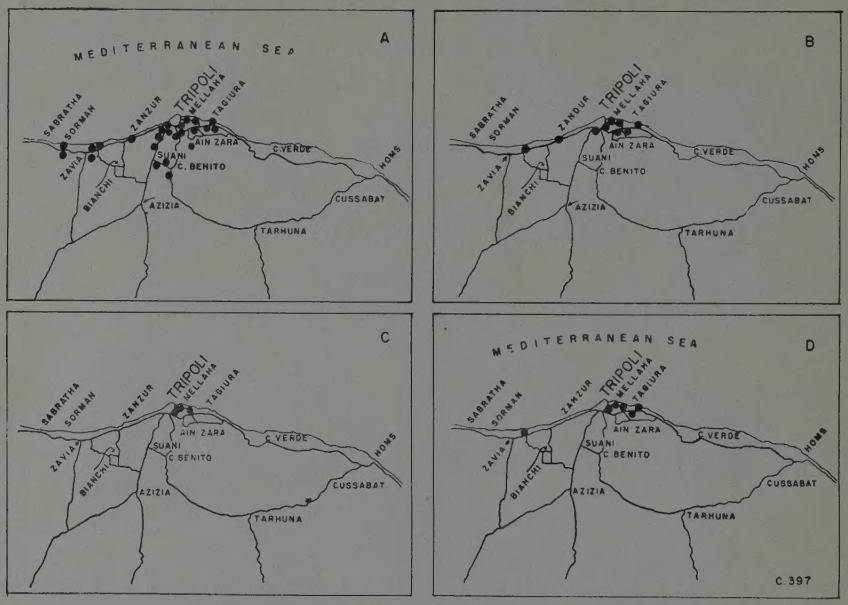

Figure 1. Distribution of the four important species of scale insects affecting citrus in Tripolitania. A. *Chrysomphalus dictyospermi*. B. *Parlatoria pergandei*. C. *Parlatoria ziziphi*. D. *Lepidosaphes citricola*.

the route Tripoli–Suani–Castel Benito. On the other hand, the orchards on the east coast and in the interior, at Bianchi, Suani–Azizia and south of Castel Benito, are practically free. It was observed principally on oranges and mandarins, frequently covering the leaves and fruit, but rarely on pummelos and lemons.

Parlatoria pergandei occurs more sporadically and is more localized in distribution. It is limited mainly to the area of Tripoli–Tagiura, although two infestation centers have also been observed at Zanzur and Zavia. It attacks twigs and foliage as well as fruit (Figure 2). Oranges are generally more heavily attacked than mandarins and pummelos, and lemons are only occasionally infested. This scale insect has particularly disastrous effects on citrus exports. Most importing countries refuse shipments, no matter how mild the infestation.

Parlatoria ziziphi occurs, fortunately, in Tripoli and its environs only. It is found in orchards situated in or near the oases of Tripoli, Sidi Mesri, Suk el Giuma and Mellaha. Oranges are more frequently attacked, but infestations have also been found on mandarins, pummelos, lemons and sour oranges. Leaves and fruit of these hosts are often completely covered by the insect.

Lepidosaphes citricola is found only in the region of Tripoli–Tagiura and in some orchards at Zavia, heaviest infestation occurring in the oases. Oranges are attacked most frequently but the insect occurs also on mandarins, pummelos and lemons.

From the above, it would appear that local climatic conditions are the main factors influencing these four pests. *Chrysomphalus dictyospermi* is well adjusted to the relatively dry climates in the orchards of the interior at Suani, Castel Benito and Ain Zara, whereas *Parlatoria pergandei*, and especially *Parlatoria ziziphi* and *Lepidosaphes citricola*, are restricted to the more humid orchards on the west coast and in the oases of the region of Tripoli.

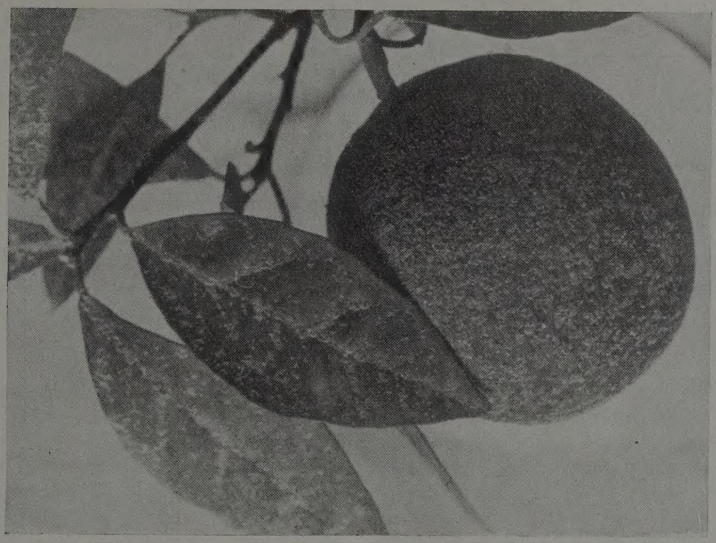

Figure 2. Orange fruit and leaves heavily infested by *Parlatoria pergandei*.

The other three species are relatively unimportant. Infestation by *Coccus hesperidum* is rare and has been observed at Zavia, Sidi Mesri, Suani, Castel Benito, Sgedeida and Garabulli on oranges, lemons and mandarins. In no case was the damage considerable.

Pseudococcus citri causes practically no damage. Some attacks have been observed in Zanzur, Tripoli, and Tagiura on oranges and lemons, most frequently on fruit pedicels. Twigs and leaves are very rarely infested.

Icerya purchasi occurs in small numbers in almost all citrus groves of Tripolitania. It has been observed principally on oranges, but is also found on mandarins and lemons. Its natural parasite, *Rodolia* (*Novius*) *cardinalis* Muls., generally keeps the population of this scale down to a very low limit. At Garabulli very heavy attacks were observed in July and August on oranges, but after the introduction of the parasite into the orchards the insect had disappeared almost completely at the end of the season.

Demonstrations and Experiments

During the period from 5 March to 2 October 1953, numerous demonstration treatments were carried out to control the scale insects in the principal citrus areas of Tripoli, Tagiura, Sgedeida, Ain Zara, Suani and Zavia. Altogether 12,987 trees in 46 infested orchards were sprayed with 114,940 liters of insecticidal solution. In general these applications gave satisfactory results.

In addition to these demonstrations, experiments were carried out in heavily infested orchards in the region of Tripoli, using parathion and various types of white oil. Not all of these products proved equally efficient. In general the white oil emulsion gave better results than the emulsifiable oils and parathion. While *Chrysomphalus dictyospermi* is relatively easy to control with these insecticides, the same is not true of *Parlatoria* and *Lepidosaphes*.

The efficiency of a treatment depends not only on the formulation of the insecticide but also on the thoroughness of application. Materials which proved satisfactory in the experiments were often less so in large-scale control operations, and were frequently ineffective in certain orchards treated by the proprietors themselves.

All treatments against the scale insects were made with power sprayers at a pressure of 20 to 30 atmospheres with an adjustable nozzle; an average of 8 liters of solution per

Table 1. *Summary of data on the effect of various treatments for control of citrus scale insects, 1953*

Insecticide and Dosage	Percent Mortality			
	Chrysomphalus dictyospermi	*Parlatoria ziziphi*	*Parlatoria pergandei*	*Lepidosaphes citricola*
White oil (emulsion):				
2 %	97–100	98–100	98	99
White oil (emulsifiable):				
1 %	—	51	—	82
1.5 %	99	92–94	—	97
Parathion (wettable powder, 15 % active ingredient):				
0.05 %	—	18–57	—	93–94
0.1 %	—	99	78	100
0.2 %	—	—	87	—
White oil, 2 % + parathion suspension, 0.02 %	—	99	99	100
Check	—	13	16	6

tree was used. In 10 to 15 days after the treatment 100 to 500 female scales were examined in the laboratory to determine the mortality. The results of such examinations, as summarized in Table 1, indicate that the treatments with white oil emulsions are satisfactory while emulsifiable concentrated oils appear to be less effective. The efficiency of parathion varies considerably according to the concentrations used and the species of the insect. The minimum effective dose appears to be 0.02 percent active ingredient; even at this concentration *Parlatoria pergandei* is difficult to control. A mixture of white oil with 0.02 percent parathion is, on the other hand, moderately efficient against all these scale insects.

Summary and Recommendations

Scale insects are a grave danger to citrus growing in Libya, threatening, as they do, both the productivity of the trees and also the citrus export trade.

Seven different species have been observed in Tripolitania, the most important being *Chrysomphalus dictyospermi*, *Parlatoria pergandei*, *Parlatoria ziziphi* and *Lepidosaphes citricola*. *Chrysomphalus* is the most widely distributed.

Experimental treatments show that white oils still remain the best insecticides against these scale insects. These treatments give satisfactory results against *Chrysomphalus* but *Parlatoria* and *Lepidosaphes* appear to be more difficult to control.

It is strongly recommended that most energetic control measures be taken to localize the existing infestation centers. Since *Parlatoria pergandei*, in particular, is dreaded by importing countries, control measures against it must be strictly enforced.

The following treatments are recommended. For the widespread *Chrysomphalus*, 2 percent white oil may be used. For the more resistant *Parlatoria* and *Lepidosaphes*, parathion at 0.02 percent active ingredient should be added to the white oil. The first treatment should be applied before blooming or at the stage when the fruit is the size of a walnut. In case of heavy infestation a second treatment should be applied after 3 to 4 weeks. Best results are obtained if motor sprayers at 20 atmospheres pressure are used and the entire tree, including the interior, is completely covered.

Plant Disease Situation in the United States

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A Latent Virus of Fragaria [1]

SINCE 1949 a runnerless variety of Alpine strawberry, *Fragaria vesca*, propagated by seed, has been used at the University of California as a standard virus indicator plant in the isolation and study of strawberry viruses. When viruses considered to be discrete and producing consistent symptoms in seedling Alpine plants were transmitted into clonal selections of *F. vesca* (East Malling clone) and *F. bracteata*, two types of symptoms resulted: (1) a mild type relatively characteristic of the disease in the Alpine variety and (2) a more severe type. On seedling plants of clones established from selected seedlings only the mild type of symptoms resulted.

It became evident that the type of reaction could be related to selected lines that had been propagated as clones. Visual comparison failed to indicate any characters by which the clones giving the more severe type of symptoms (S clones) could with certainty be distinguished from other clones giving the mild symptoms (M clones). It was hypothesized that the S clones might be carrying a latent virus not present in the M clones.

To test the hypothesis, grafting tests were carried out in which stolons of two *F. bracteata* and two *F. vesca* plants of S clones were each inarched to a stolon on a plant of an M clone propagated from a *vesca*–type seedling selection. In addition, one plant of an S clone and one plant of an M clone, both of *F. vesca*, were inarched together. A non–grafted sister plant of each of the two M clones was set aside for runner development. After two months, daughter plants were propagated from all of the twelve test plants, and as soon as they had become established were inoculated with six undetermined viruses or virus strains by means of the strawberry aphid, *Capitophorus fragaefolii* (Ckll).

The aphids transmitted virus to every plant. All non–grafted M plants developed mild symptoms similar to the expression characteristic for each virus in the Alpine variety. All grafted plants developed a more severe type of symptoms. Evidently the factor in the S clones is transmissible by grafting and is carried through the stolon from mother to daughter plants. It is concluded that a latent virus, designated as "strawberry latent virus," is present in the S clones.

The effect of the latent virus is to cause a more severe disease when in combination with a second virus than would be caused by the second virus alone. It has been pronounced in combination with viruses or virus strains similar to strawberry mottle, in the few tests made so far.

In non–carrying plants of *F. vesca* (East Malling clone), one of the milder mottle viruses or virus strains causes only slight stunting, very mild vein clearing and chlorotic mottle on immature leaves, diffuse faint mottle on older leaves, with little tendency to leaf deformation or raised green blisters (Figure 1). In *F. vesca* plants carrying latent virus, the same mottle virus often causes an initial shock reaction during which immature leaves exhibit marked yellow vein clearing, frequently a downward crooking of the petiole and partial or complete necrosis of leaflets. Later, affected plants show definitive reduction in size, a greater than normal crown proliferation, petioles frequently curved and twisted, lamina moderately deformed, crinkled and blistered with diffuse mottle, finely cleared and often merged veins, and characteristic chlorotic spots appearing like scar–tissue scattered over the lamina and

[1] Based upon a report by Norman Frazier.

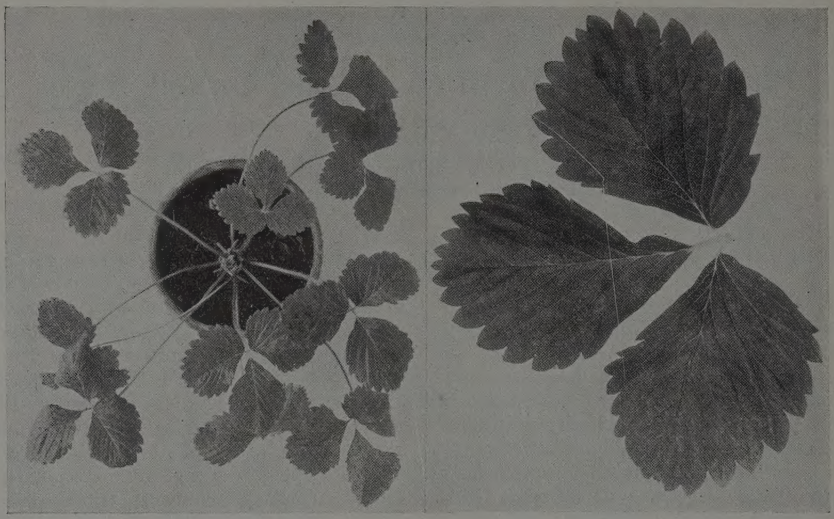

Figure 1. Symptoms in *Fragaria vesca* (East Malling clone) caused by a mild strawberry mottle type virus alone.

along the margins where they cause malformation (Figure 2). In combination with other mottle viruses or strains, the symptoms may be more severe.

The latent virus carried in *F. bracteata* is similar to that carried in *F. vesca*. The symptoms produced by the latent virus, whether from *bracteata* or *vesca*, when combined with a common virus in a common host appear to be of the same type, but differ consistently in that the virus in *F. bracteata* causes a distinctly more severe disease. Present information indicates that the difference in reaction may be due to strains of the same virus. The virus from *F. vesca* is designated as strain A, and that from *F. bracteata* as strain B, of the strawberry latent virus.

Little information exists concerning the latent virus and its origin or distribution. The virus has been transmitted only by grafting. Initial attempts at transmission by means of several aphids, including the strawberry aphid, have yielded only negative results. There is no indication that natural spread has ever occurred in the greenhouse, although such spread might easily not have been detected, or that the latent virus has ever been transmitted during vector tests with other strawberry viruses in which the inoculum plant has become known to carry latent virus.

The *F. bracteata* stock was originally obtained in the wild in Sonoma and Santa Cruz Counties in California. It would seem that some of the original plants from both localities were naturally infected.

The East Malling clone of *F. vesca* was propagated from four plants received from two sources in 1949, and from one of the same sources some additional plants were secured during 1951, only one of which was selected for propagation. All four plants received in 1949 carried latent virus, but the single plant propagated from those received during 1951 was virus free.

It is not known how widespread has been the use of the contaminated stock of *F. vesca*, or to what extent its use may have influenced the symptom descriptions in the literature of strawberry viruses in *F. vesca*. It is certain, however, that the use of indicator plants carrying the latent virus would greatly influence the results of strawberry virus investigations.

Figure 2. Symptoms in *Fragaria vesca* (East Malling clone) caused by a mild strawberry mottle type virus in combination with strawberry latent virus strain A.

Discovery of Citrus Exocortis in Florida [2]

The trifoliate orange, *Poncirus trifoliata*, possesses important advantages as a rootstock for citrus. It produces fruits of high internal quality, and is resistant to cold, citrus nematodes (*Tylenchulus semipenetrans* Cobb), foot rot, and water damage. Above all, it is tolerant of or immune from the virus disease tristeza. These advantages, however, are offset by susceptibility to exocortis or "scaly butt," a disease that causes a scaling of the butts and a stunting of the tops. This disease has been reported previously from citrus areas throughout the world, including California and Louisiana in the United States, Uruguay, Argentina, Australia, and South Africa, and may at times assume considerable importance.

A scaling of trifoliate butts was first recorded in Florida during the summer of 1952. It has been observed since then on trifoliate rootstocks grafted with sweet orange, navel orange and grapefruit. A comparison of symptoms with those observed in Louisiana, Argentina, and Uruguay, indicates that the exocortis disease is the cause.

There are indications that the causal agent, which is considered by some authorities to be a bud–transmissible virus, has been present in Florida for some time. In one known instance trees developed from Florida budwood sent to Louisiana and budded onto trifoliate seedlings, showed symptoms of exocortis. In Uruguay, trifoliate rooted trees developed from budwood of Duncan grapefruit from Florida were also observed to be severely stunted and affected by exocortis scaling. Other trifoliate seedlings of the same lot were budded at the same time to Thompson, Foster, and Marsh Seedless grapefruit buds also from Florida, but none of these trees shows stunting or scaling at present.

The failure to observe exocortis earlier in Florida may be attributed to the fact that the trifoliate orange is rarely used in the main producing areas as a rootstock for oranges, tangerines, or grapefruit. In Florida this rootstock is almost wholly restricted

[2] Based on a report by L. C. KNORR, E. P. DUCHARME and J. N. BUSBY.

to the growing of Satsumas trees in the northern counties. Exocortis has not been seen in this combination in spite of extensive observations. This suggests that Satsumas may have escaped infection, or that they may inhibit the development or expression of the causal virus.

The choice of citrus rootstocks tolerant both of the tristeza virus and of wet heavy soils is critically limited. *Poncirus trifoliata*, possessing both these desirable qualities, has been enthusiastically adopted by growers in tristeza–devastated areas. Subsequent experiences of losses from exocortis suggests that in Florida the trifoliate orange should be used only on a limited or experimental basis until more is known about the occurrence of exocortis, both in its latent and expressed forms, in different citrus varieties.

DIGEST OF PLANT QUARANTINE REGULATIONS: FIRST SUPPLEMENT

In advancing the objectives of the International Plant Protection Convention of 1951, a new edition of the Digest of Plant Quarantine Regulations, covering forty countries and territories, was issued in 1952 as FAO Agricultural Development Paper No. 23. In addition to providing a medium for circulating information on legislation governing the imports of plants and plant products, it was considered that a better mutual understanding among governments would stimulate the improvement of existing plant quarantine measures and would lead to fuller international co-operation in the field of plant protection.

The First Supplement to this publication was published in May 1954 in mimeographed form. It contains summaries of the plant quarantine legislation of thirty-eight countries and territories which were not covered in the Digest, namely:

Antigua	Gambia	Saint Helena
Barbados	Gilbert and Ellice Islands Colony	Saint Lucia
Bermuda	Gold Coast	Saint Vincent
British Guiana	Grenada	Sarawak
British Honduras	Kenya	Sierra Leone
British Solomon Islands	Maltese Islands	Singapore
British Virgin Islands	Mauritius	Spain
Cambodia	Montserrat	Spanish Morocco
Costa Rica	Nigeria	Sudan
Denmark	North Borneo	Tonga
Dominica	Northern Rhodesia	Trinidad and Tobago
Falkland Islands	Saint Christopher and Nevis	Uganda Protectorate
Fiji		Zanzibar Protectorate

The Digest and supplements are complementary to the plant quarantine announcements published in this Bulletin, with which they should be read. Further supplements will be issued from time to time to cover additional countries.

The First Supplement has been supplied to the plant protection services of all FAO Member Governments and is obtainable from Plant Production Branch, Agriculture Division, FAO, Rome.

Outbreaks and New Records

Jordan

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Outbreak of Wheat Leaf Miner

A serious outbreak of the wheat leaf miner, *Syringopias temperatella* Led., took place in Jordan during March 1954. This insect was first noted in the Tulkarm area in late January in a few isolated plantings. It began to build up to serious proportions in late February. By the middle of March it was causing heavy damage in the Nablus and Tulkarm areas and was present in varying degrees of infestation in all of west Jordan, and in east Jordan as far south as Madaba. Toward the end of the month pupation was occurring generally, but no further increase in damage this season is anticipated

Netherlands New Guinea

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Agricultural Research Section
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First Record of Sorghum Anthracnose

Anthracnose disease caused by *Colletotrichum* sp. was found on sorghums (*Sorghum vulgare*) grown at the Experiment Station Kota Nica in early 1954. This disease had never been previously observed in Netherlands New Guinea.

The sorghum variety Pretoria was badly affected and showed the characteristic symptoms. The lesions, which were reddish brown, deep brown or grayish in the center with a red margin, occurred on the leaves in a very young stage. On the midribs of the leaves the spots were lighter–colored. Lesions varying from red, reddish brown, and dark brown to deep violet also appeared on the stalk. In the pith of the stalks, the fungus caused a red rot. Cracking of the upper part of the stalk or culm, mentioned in literature as a symptom of anthracnose infection, was not observed.

The variety Mimosa Park was also susceptible to this disease but the rot developed in the stalks was less extensive. Infection in the variety Katengu was less severe, with rather indistinct discoloration on the leaves. The varieties Early White and Birdproof were relatively resistant, showing fewer leaf spots, and pith rot was observed only in association with tunnels made by stalk borers.

New Zealand

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Incidence of Antirrhinum Rust

Antirrhinum rust (*Puccinia antirrhini* Diet. & Holw.), a disease not known to occur in New Zealand before 1953, was previously reported (see *FAO Plant Prot. Bull. I:* 122. 1953) as having been intercepted in introduced seed in early 1953, and has again been intercepted in 1954 in seed imported from the United States and the United Kingdom.

Unconfirmed reports were received of the occurrence of the disease in Dunedin and Palmerston North in the autumn of 1953 and now it has been positively identified from Auckland, Palmerston North and Wellington. Obviously this disease has been present undetected in the country for some time.

Sudan

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Unusual Outbreaks of Cotton Leafworm

The cotton leafworm, *Prodenia litura* F., is known as a minor pest throughout the greater part of the cotton growing area in the Sudan. Heavy outbreaks are rare. During 1952, however, severe but local outbreaks took place in the main cotton growing area in the Gezira. The attack did not last long and no more than one generation seems to have been completed in the crop. Birds, especially *Demoiselle crane*, were largely responsible for the eradication of the infestation.

Rice Gall Fly: a New Record

Rice, grown on an experimental scale at Malakal, southern Sudan, during 1953, suffered an attack by a Cecidomyiid fly which proved to be *Pachydiplosis oryzae* (Wood–Mason) Mani. This insect is known to occur mainly in Southern Asia and has been reported to cause considerable damage occasionally in Indonesia and India. This is the first record of its occurrence in the Sudan.

United States

Plant Pest Control Branch
Agricultural Research Service
United States Department of Agriculture

The following notes record the occurrence of several insects which are new either to the United States or to certain areas in the country.

A Grain Sawfly New to California

In 1953 a species of sawfly caused serious damage to wheat in Cuyama Valley, Santa Barbara County; however, definite determination could not be made at that time due to lack of adults. Early check of the infested areas this season has shown adults in abundance and the insect has been determined as *Pachynematus sporax* Ross. The 1953 find was apparently the first record of the species south of Medford, Oregon. High populations have been observed in the infested area this year.

Two New Records for Florida

A stellate scale, *Vinsonia stellifera* (Westw.), was found on orchid leaves in the Miami area during September 1953. Since this scale is known to attack orchids and other ornamentals, citrus and mangoes, all of commercial importance in Florida, eradicative measures were started immediately.

Another new record was established for Florida recently when a coconut weevil, *Eucoptus depressus* Woll., was recorded on coconut trees in Miami. There seems to be no record of any economic injury to palms by this insect and apparently it is not considered of consequence as a pest.

As far as can be determined, these records are also the first authentic occurrences of these two insects in the United States.

Asparagus Beetle Reported from Arizona

The asparagus beetle, *Crioceris asparagi* (L.), was reported from Arizona for the first time during April 1954. Small numbers were collected on asparagus near Yuma. This pest occurs over wide areas of the United States, especially in the eastern states.

PLANT QUARANTINE ANNOUNCEMENTS

Algeria (France)

An Order dated 20 February 1954, published in the *Journal Officiel de l'Algérie*, Vol. 28, No. 18, 2 March 1954, prohibits the importation of cotton seed into Algeria from any source.

Belgium

A Royal Decree of 10 February 1954, published in the *Moniteur belge* on the 18th of that month, prohibits the importation of seed potatoes, as well as the sale, offer or show for sale, and the holding or transportation for the purpose of selling, of imported seed potatoes:

(*a*) which are not deemed to be seedlings controlled by an organization instituted, recognized or approved by the government of the producing country;
(*b*) whose wrappings do not bear on the outside a label and a seal affixed by the control organization, and do not contain a certificate certifying the quality of the goods;
(*c*) which are not among the varieties listed by the Belgian Ministry of Agriculture.

The above restrictions, however, may be waived by the Ministry of Agriculture in the case of importation of seed potatoes for experimental uses.

The importation of seed potatoes of less than 28 mm. diameter, and which are not wrapped in machine-sewn woven bags, in sound condition and having inside seams, is likewise prohibited, except where exemption is granted by the Ministry of Agriculture.

The Decree also prohibits the selling of seed potatoes produced in Belgium, which are not accepted by the Office National des Débouchés Agricoles et Horticoles.

Greece

A Royal Decree of 12 June 1953, published in *Government Gazette* No. 168, 25 June 1953, supplements Decrees of 13 June 1934, 11 December 1937, 12 March 1949 and 9 February 1950 relating to the control of importation and transit of potatoes, Italy and Yugoslavia being added to the list of countries infested by the Colorado beetle, *Doryphora* (*Leptinotarsa*) *decemlineata*.

Countries so listed previously included:

Belgium	Luxembourg
Bermuda	Mexico
Brazil	Netherlands
Canada	Portugal
Denmark	Spain
France (excl. colonies and Corsica)	Switzerland
	United Kingdom
Germany	United States

The legislation in force prohibits the importation into and transit through Greece of potatoes and parts thereof from infested countries, and of containers which have been used for their transportation and storage.

Guatemala

An Order of 18 November 1953, published in the *Diario Oficial*, Vol. 140, No. 34, 30 December 1953, expressly prohibits the importation of coniferous trees, particularly fir trees.

Its purpose is to combat the danger of introducing pests and diseases into the forest regions of the country.

Honduras

Decree No. 115 of 14 August 1953, which came into force on 26 February 1954 when it was published in the *Boletin del Congreso Nacional Legislativo*, Ser. II, No. 11, prohibits the importation of plants, seeds and any other propagating material, as well as packing materials and soil accompanying them, except where previously authorized by the Ministry of Agriculture and where the shipment is accompanied by the following documents:

(*a*) an official phytosanitary certificate issued by the exporting country;
(*b*) a certificate attesting the absence of destructive pests at the place of origin; and, if possible,
(*c*) a certificate indicating that the material has been fumigated at the port of departure.

Compliance with the above mentioned requirements does not exempt the imported plants from quarantine.

India

Notification No. F. 6–25/53 dated 2 April 1954, which amends the Rules of 20 July 1936, regulating the importation of plants, etc, into India, prohibits the importation by air of unmanufactured tobacco, either raw or cured, from any country except Burma and the Kalat State. The transit of such tobacco through India by air or sea will be allowed if the tobacco is securely packed and not opened in any part of India, and is accompanied by a phytosanitary certificate and a certificate indicating that the consignment is free from *Ephestia elutella* or that this pest does not exist in the country of origin.

Under the 1936 Rules, unmanufactured tobacco imported by sea from any country other than Burma and the Kalat State must also be accompanied by the two certificates mentioned above. Otherwise, the consignments will be inspected on arrival at the importers' expense, or will be fumigated at the Fumigatorium in Bombay; in the latter case the consignee must inform the Collector of Customs, Bombay, and the entomologist in charge of the Fumigatorium in advance of the probable date of arrival of the ship and the number of cases contained in the consignment:

Netherlands

1. Decree No. 10.764/84 of 1 April 1954 relating to conditions governing importation of potatoes, published in the *Nederlandse Staatscourant* No. 66, 5 April 1954, revokes Order No. L/PA 984 of 14 September 1953. Under the new Order, potatoes may be imported only in cases where:

(*a*) the consignment has been examined in the country of origin and found to be free from black wart disease (*Synchytrium endobioticum*);
(*b*) black wart disease has never been observed in the field where the potatoes were grown;
(*c*) the consignment is accompanied by an original certificate issued by the plant protection service of the country of origin, in the form set out by the International Plant Protection Convention of 1951 and containing no additional declaration.

In the case of re–exportation, the consignment should be accompanied by a certificate issued by the re–exporting country to the effect that the potatoes after storage are still believed to conform with the requirements indicated above.

2. Decree No. 10.765/84 of 1 April 1954, amends the San José Scale Decree of 1953 (see *FAO Plant Protection Bulletin 1* : 124, 1953). Living woody plants may be imported during the period from 1 October to 1 April, if they have been examined in the country of origin and found to be free from the San José scale. Each consignment must be accompanied by an original certificate in the form set out by the International Plant Protection Convention of 1951 and containing no additional declaration. On re–exportation, the certificate issued by the re–exporting country should attest that the consignment, after storage, is still believed to conform with the requirements.

United Kingdom

1. The Importation of Plants (General Licence) (Amendment) Order, 1954, which came into operation on 1 April, amends the Importation of Plants (General Licence) Order, 1953, adding the names of the following six plants to the list of those which may be imported under restrictions.

Coleus	*Pinguicula*
Cycas revoluta	*Salvia*
Genista	*Stapelia*

These plants and parts thereof grown in any European country, the United States or Canada may be introduced throughout any year if accompanied by a health certificate and a Form B certificate, in forms set out in the Importation of Plants Order of 1947 as amended in 1952.

2. The Importation of Plants from Belgium, France, and the Netherlands (General Licence) Order, 1954, modifies the restrictions laid down in the Importation of Plants Orders, 1947 to 1953, in the case of certain produce imported from Belgium, France and the Netherlands during specified periods in 1954. The provisions of the new Order are essentially the same as those of the Order made under the same title in 1953 (see *FAO Plant Protection Bulletin 1* : 124, 1953).

3. The Importation of Potatoes from Portugal and Spain (General Licence) Order, 1954, modifies, for the period 15 April to 15 May in 1954, the restrictions imposed by the Importation of Plants Orders, 1947 to 1953, on the landing of new potatoes from Portugal and Spain. During this period every consignment of such potatoes is required to be accompanied by a certificate issued by the phytopathological service of the country of origin, in the form set out in the Order, in place of the two certificates required by the Importation of Plants Orders.

United States

Foreign Quarantine Notice of 17 February 1954, published in the *Federal Register* Vol. 19, No. 36, 20 February 1954, amends Quarantine No. 59, relating to flag smut of wheat, with the deletion of Germany from the infested countries designated in the Order of 6 May 1953 (see *FAO Plant Prot. Bull. 1*: 159, 1953). This amendment is made in view of recent scientific findings which indicate that the flag smut of wheat, *Urocystis tritici*, does not exist in Germany.

NEWS AND NOTES

The Desert Locust Situation

Recent reports indicate that the desert locust has bred intensively during the spring of 1954 over wide areas of central and northeastern Saudi Arabia and that, despite the control measures undertaken, considerable numbers of swarms may escape in May and June to invade surrounding countries. The breeding extended into Iraq and a few swarms reached Syria. Widescale breeding has occurred in Iran and there has been an important movement of swarms eastwards into Pakistan where breeding has commenced.

In eastern Africa the desert locust, although still widespread, has recently declined in intensity. In northwestern Africa considerable infestations are present in Morocco and Algiers.

During the second meeting of the Executive Committee for Desert Locust Control in the Arabian Peninsula, convened by FAO at Amman 10–12 April 1954, it was reported that encouraging progress was being made in expanding international anti-locust measures in Arabia. Combined Saudi Arabian–Egyptian control teams were operating in Nejd using vehicles and bait contributed by Saudi Arabia, FAO and the British Desert Locust Control organization. British units were operating in southwestern coastal areas and in Kuwait, and Egyptian units in the Hejaz; Jordan and Iraqi teams had reconnoitred northwestern Saudi Arabia. Subsequently, further supplies of bait, insecticides, vehicles and funds have been made available by France, Iraq, Jordan, Syria and Turkey. Syrian teams had moved into northern Saudi Arabia and India has offered teams to work in Kuwait and adjacent areas of Saudi Arabia.

FAO is assisting in co-ordinating this international campaign, and, besides providing vehicles and equipment, is matching contributions from participating governments to meet the operating costs required.

Plans for the further development of international campaigns will be discussed at meetings of the Co-ordinating Committee for the Control of the Desert Locust in the Arabian Peninsula and of the FAO Technical Advisory Committee for Desert Locust Control to be held in Cairo in June 1954.

Third FAO Meeting on Wheat and Barley Breeding in the Near East

The Third FAO Meeting on Wheat and Barley Breeding in the Near East, held in Damascus 26 April to 2 May 1954, was attended by delegates from Egypt, Iran, Jordan, Lebanon, Pakistan, Syria, Turkey and the United Kingdom. Representatives of the French Agricultural Missions in Lebanon and Syria and of the United States Operations Missions in various countries in the region, and an observer from UNESCO, were also present.

Reports on the co-operative uniform rust and bunt nurseries received from the participating countries indicate that a number of wheat and barley varieties are highly resistant to races of rusts and bunts prevalent in the region and would be sources of valuable breeding materials. The Meeting therefore recommends that the co-operative nurseries be continued for at least one more year throughout the region and co-operative uniform yield trials be established for testing a limited number of selections from the rust and bunt nurseries which appear most promising from the agronomic standpoint.

The Egyptian delegation reported progress in the identification of physiologic races of wheat stem rust from uredial collections made in 1953 in Egypt, Syria and Turkey. The races found in these countries, arranged according to the order of prevalence in 1953, are as follows:

Egypt: 17, 19, 14, 53, 21, 24, 9, 53A, 69.
Syria: 17, 19, 21, 11, 14, 53, 34, 24, 39, 122.
Turkey: 14, 11, 53, 24, 21, 34, 122.

Evidently there is great similarity in the distribution and prevalence of wheat stem rust races in the various countries, which suggests

that there is much uredospore movement within the region.

In Egypt where investigations on stem rust races have been carried out since 1949, race 17 has been the predominant race all these years and race 19 the next. Race 53, previously recorded only as a minor race, became a prevalent one in 1953. Races 53A and 69 were isolated in 1953 for the first time, whereas races 42, 88, 123, 59 and E1, recorded in previous years, were not found.

In Syria and Cyprus, races 17 and 19 were found to occupy the same ranks as in Egypt. In Turkey, the predominant race in 1953 was race 14 which was important also in Egypt and Syria. Races 11, 13 and 122, on the other hand, were found only in Syria and Turkey but not in Egypt.

The Meeting, considering the desirability of obtaining further knowledge on the distribution of physiologic races of wheat rusts, made plans to continue and expand the rust survey to cover all participating countries.

Inter-American Technical Committee on Cacao

The Inter–American Technical Committee on Cacao was established in 1947 by the Inter–American Economic and Social Council of the Pan American Union, in order to further economic production of cacao in the Western Hemisphere for the increased welfare of producers and consumers. It includes representation from each American cacao–producing country, the Pan American Union, the American Cocoa Research Institute, and the Inter–American Institute of Agricultural Sciences. Its first meeting took place in September 1947, during which the program of the Committee was formulated to include the following:

(1) to carry on interchange of information by publishing an information bulletin;
(2) to encourage the development of co–operative research programs;
(3) to determine preference to urgent projects;
(4) to carry on regional tests;
(5) to plan projects in a uniform way;
(6) to form a reference collection; and,
(7) to encourage cacao exploration.

The fifth meeting of the Committee will be held at Turrialba, Costa Rica, 4–10 July 1954. Technicians of all cacao–producing countries and cacao research institutions are being invited to attend. At this meeting, special emphasis will be placed on a greater co–ordinated effort on the cacao problems, including pest and disease investigations. The approach to technical problems common to all cacao programs will be discussed. It is hoped that plans will be worked out to make the Committee a more effective and active organization.

PRELIMINARY LIST OF NATIONAL PLANT QUARANTINE SERVICES

This list contains names and addresses of the agencies responsible for the administration of plant quarantine in some FAO member countries and their territories, and the names of the officers in charge. It was compiled in response to enquiries, in order to facilitate direct contact between these agencies.

ALGERIA (France)
Service de la protection des végétaux
Direction de l'Agriculture, Alger
(P. Frezal, Chef).

AUSTRALIA
Department of Health
Canberra, A. C. T.
(Dr. T. H. Harrison,
Director of Plant Quarantine).

AUSTRIA
Bundesanstalt für Pflanzenschutz
Wien II/27, Trunnerstrasse 5
(Dr. Ferdinand Beran, Director)

BELGIUM
Service phytopathologique
Ministère de l'Agriculture
11, avenue du Parc, Ghent
(M. G. Delfosse, Inspecteur principal)

BOLIVIA
Departamento de Sanidad Vegetal
Dirección General de Agricultura
Ministerio de Agricultura, Ganadería y Colonización, La Paz
(Ing. Raúl Pérez Alcalá, Jefe)

BRASIL
Divisão de Defesa Sanitaria Vegetal
Departemento Nacional da Producão Vegetal
Ministerio de Agricultura, Río de Janeiro
(Dr. João Vieira de Oliveira,
Chefe da Fiscalização Fitosanitaria)

CAMBODIA
Service de police sanitaire végétale
c/o Institut de recherches piscicoles

Phnom-Penh
(Charles Ly Sorarith, Chef)

CANADA
Division of Plant Protection
Department of Agriculture, Ottawa
(W. N. Keenan, Chief)

CEYLON
Department of Agriculture, Peradeniya
(Dr. H. E. Fernando, Entomologist
Dr. J. W. L. Peiris, Plant Pathologist)

CHILE
Departamento de Sanidad Vegetal
Ministerio de Agricultura
Quinta Normal, Casilla de Correo N°. 4647, Santiago
(Ing. Agr. Luis A. Belmar Puelma, Director)

CUBA
Negociado de Cuarentenas
Ministerio de Agricultura, La Habana
(Ing. Virgilio Lasaga, Jefe)

CYPRUS
Department of Agriculture, Nicosia
(D. K. Jones, Agricultural Officer)

DENMARK
Statens Plantetilsyn
13 Gersonsvej, Hellerup
(Hans R. Hansen, Director)

DOMINICAN REPUBLIC
Secretaría de Estado de Agricultura, Pecuaria y Colonización
Sección de Trabajos de Campo, Experimentación y Investigación Agrícola
San Cristóbal, C. B.
(Ing. Alberto Bergés Chupani, Jefe)

EGYPT
Department of Plant Protection
Ministry of Agriculture, Cairo
(S. Zohery, Director
Sadik Mowafi, Chief of Section of Plant Quarantine, stationed at Alexandria)

ENGLAND AND WALES
Horticulture Branch
Ministry of Agriculture and Fisheries
3, Whitehall Place, London, S. W. 1.
(P. G. Inch, Head)

ECUADOR
Dirección Técnica de Agricultura
Ministerio de Agricultura, Quito
(Ing. Miguel A. Cevallos, Jefe de Sanidad Vegetal)

FINLAND
Lantbruksförsöksanstalten
Avdelningen för Växtsjukdomar
Dickursby
(Prof. E. A. Jamalainen, Chief)

Lantbruksförsöksanstalten
Avdelningen för Skadedjur,
Dickursby
(Prof. V. Kanervo, Chief)

FRANCE
Service de la protection des végétaux
Ministère de l'Agriculture
78, rue de Varennes, Paris 7ème
(P. Dumas, Chef)

FRENCH MAROCCO
Service de la Défense des végétaux
65 bis, avenue de Témara
Rabat (Maroc)
(J. Perret, Chef)

FRENCH WEST AFRICA
Protection des végétaux et lutte antiacridienne
Inspection générale de l'Agriculture
Dakar (Sénégal)
(A. Mallamaire, Chef)

GREECE
Service phytopathologique
Ministère d'Agriculture, Athens
(Andre Ayutantis, Directeur)

GUATEMALA
División de Sanidad Vegetal
Ministerio de Agricultura, Guatemala
(Miguel Angel Reyes, Jefe)

GERMANY (Federal Republic of)
Der Bundesminister für Ernährung, Landwirtschaft und Forsten
Bonn 12
(Dr. H. Drees, Chef Abt. Pflanzenschutz)

INDIA
Directorate of Plant Protection, Quarantines and Storage
Shahjahan Road Hutments, New Delhi
(Dr. K. B. Lal, Plant Protection Adviser to the Government
Dr. V. P. Rao, Assistant Director, Foreign Quarantines)

IRAQ
Plant Protection Division
Ministry of Agriculture, Baghdad
(Ahmad Dhia, Director)

IRELAND (Republic of)
Department of Agriculture
Government Building, Dublin
(D. Delaney, Senior Inspector)

ISRAEL
Division of Plant Protection
Ministry of Agriculture
P. O. Box 8393, Jaffa
(Dr. J. Peleg, Head)

ITALY
Servizi Fitopatologici
Ministero dell'Agricoltura e Foreste, Rome
(Dr. Brenno Colonna, Chief)

JAPAN
Plant Protection Section
Agricultural Improvement Bureau
Ministry of Agriculture and Forestry, Tokyo
(Masaakira Hori, Chief
Hidezo Shiino, Quarantine Chief)

KENYA
Scott Agricultural Laboratories
Department of Agriculture
P. O. Box 338, Nairobi
(Dr. R. H. Le Pelley, Senior Entomologist)

LUXEMBOURG
Service phytopathologique
Administration des Services agricoles
(Edmond Wirion, Chef)

MEXICO
Dirección–General de Defensa Agrícola
Ministerio de Agricultura
México, D. F.

NETHERLANDS
Plantenziektenkundige Dienst
Wageningen
(Dr. C. J. Briejer, Director)

NEW ZEALAND
Horticulture Division
Department of Agriculture, Wellington
(A. Greig, Director)

NICARAGUA
Defensa Agrícola
Ministerio de Agricultura, Managua
(José Zepeda Alañiz, Jefe)

NORWAY
Statens Plantevern
Sarsgade 1, Oslo
(T. H. Schøyen, Entomologist
J. Jørstad, Mycologist)

PAKISTAN
Department of Plant Protection
Ministry of Agriculture, Karachi – 3
(Dr. Taskhir Ahmad, Director)

PERU
División de Defensa Agrícola
Ministerio de Agricultura, Lima
(Ing. Agr. Rafael Martinelli Tizón, Jefe)

PHILIPPINES
Plant Pest and Disease Control Division
Bureau of Plant Industry
Department of Agriculture and National Resources, Manila
(Severo Marquez, Assistant Chief in charge of Plant Quarantine Service)

PORTUGAL
Ministerio da Economia
Direção Geral dos Serviços Agricolas
Repartição de Serviços Fitopatologicos
39 rua de S. Bento, Lisboa
(Ing. Francisco Aranha, Chefe)

SPAIN
Servicio Nacional de Fitopatología y Plagas del Campo
Dirección General de Agricultura
Ministerio de Agricultura, Madrid
(Ing. Federico Bajo Mateos, Jefe)

SWEDEN
Statens Växtskyddsanstalt
Stockholm 19
(Prof. Th. Lindfors, Head)

SWITZERLAND
Eidgenössisches Volkwirtschaftsdepartement
Abteilung f. Landwirtschaft
Laupenstrasse 25, Bern
(A. Chaponnier, Chef)

TONGA
Department of Agriculture
Nuku'Alofa
(W. Straatmans, Head)

TURKEY
Service pour la protection des plantes et produits agricoles
Ministère de l'Agriculture, Ankara
(M. R. Görkmen, Directeur)

UGANDA
Kawanda Research Station
P. O. Box 265, Kampala
(A. P. G. Michelmore, Senior Entomologist)

UNION OF SOUTH AFRICA
Division of Entomology
Department of Agriculture
P. O. Box 513, Pretoria
(Dr. T. J. Naude, Chief)

UNITED STATES OF AMERICA
Plant Quarantine Branch
Agricultural Research Service
Department of Agriculture
Washington 25, D. C.
(E. P. Reagan, Chief)

YUGOSLAVIA
Institut fédéral pour la protection des plantes, Ministère de l'Agriculture, Belgrade
(G. Nonveiller, Chef)

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Sufficient of the techniques of soil classification and mapping are outlined so that the mode of operation, the type of equipment involved and the cost of the work can be accurately assessed.
Maps in color. Good bibliography.

***Legumes in Agriculture*, 1953, xiii+367 pp. $ 3.00, 15s.**

This volume brings together a unique selection of information about legumes. It called for the collaboration of specialists in all member countries of FAO; 111 are cited in the general acknowledgments and many more are mentioned in the text itself.

***Agricultural Development and Rural Reform in Denmark*, 1953, vii+320 pp. $ 3.00, 15s.**

FAO is now giving considerable attention to land tenure problems. This monograph covers not only the subject of land tenure, but also several aspects of agricultural development in Denmark closely associated with this subject, so that it can be considered as a significant contribution to the work of FAO in this field.

***Improving the World's Grasslands*, 1951, xiii+147 pp., 107 illustrations, 12 tables. $ 2.00, 10s.**

"It is an important contribution to the subject; the general reader will find it of interest, while the specialist will find it invaluable." - Review in *World Crops*.
(Published for FAO by Leonard Hill Ltd., 9 Eden Street, London N.W. 1., England).

***Weed Control by Growth-Regulating Substances*, 1951, iii+36 pp., 5 illustrations, 2 tables. Third English printing. $ 0.50, 2s. 6d.**

All three editions of this short book have sold rapidly and the Spanish and French editions have been serialized in the agricultural press.

***Efficient Use of Fertilizers*, 1949, x+182 pp., 50 illustrations, tables, maps, charts. Second English printing, 1952. $ 2.00, 10s.**

This handbook on fertilizers and their use in crop production is one of FAO's best-sellers. The Spanish edition, which has been serialized six times in Latin America and Spain, is now in its second printing. The English edition is obtainable from Leonard Hill Ltd., 9 Eden Street, London, N.W. 1., England.

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